

REMARKS

Claims 1-4 and 6-22 are pending in this application. By this Amendment, claims 5 and 23 are cancelled without prejudice to or disclaimer of the subject matter contained therein, and claims 1, 6-8, 13, 14 and 22 are amended. No new matter is added by any of these amendments.

Reconsideration based on the following remarks is respectfully requested.

I. The Claims Define Patentable Subject Matter

The Office Action rejects claims 14 and 17 under 35 U.S.C. §102(b) over U.S. Patent 4,683,146 to Hirai *et al.* (Hirai). This rejection is respectfully traversed.

Hirai does not teach or suggest aAn ink-jet ink composition for forming a silicon film, including a silicon compound represented by Si_nX_m with n representing an integer of 3 or more, m representing an integer of n, $2n-2$, $2n$, or $2n+2$, and X representing a hydrogen atom and/or a halogen atom, wherein the ink composition to be provided onto the substrate has a surface tension of 20 to 70 dyn/cm for preventing non-linear flight of ink when emitted, and for retaining a stable meniscus shape in an ink-jet nozzle, as recited in claim 14.

Instead, Hirai discloses branched chain silicon hydrides. In particular, Hirai teaches a deposition chamber to feed gas sources. See col. 3, lines 5-14, col. 4, lines 35-66 and Fig. 1 of Hirai.

The Office Action further rejects claims 15 and 18 under 35 U.S.C. §102(b) over the article "Through-Bond Interactions in Silicon-Phosphorus and Silicon-Arsenic Compounds" in *Chemistry—A European Journal*, 3, 874-880 by Winkler *et al.* (Winkler).

Winkler does not teach or suggest an ink-jet ink composition for forming a silicon film, including a silicon compound represented by $\text{Si}_a\text{X}_b\text{Y}_c$ with X representing a hydrogen atom, Y representing a boron atom or a phosphorus atom, a representing an integer of 3 or more, b representing an integer of a to $2a+c$, and c representing an integer of 1 to a, the silicon compound having at least one cyclic structure, as recited in claim 15.

Instead, Winkler discloses synthesis and structure of selected silicon compounds. See page 875-876 of Winkler. Such teachings are unrelated to method of ink-jet composition recited in Applicants' claimed features.

A claim must be anticipated for a proper rejection under §102(a), (b) and (e). This requirement is satisfied "only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." See MPEP §2131. Applicants submit that the Office Action fails to show that Hirai and Winkler provide all of Applicants' claimed features, and therefore fail to anticipate claims 14, 15, 17 and 18.

The Office Action further rejects claims 1-5, 8, 14 and 17 under 35 U.S.C. §103(a) over U.S. Patent 5,989,945 to Yudasaka *et al.* (Yudasaka '945) in view of Hirai. This rejection is rendered moot with respect to claim 5, and is respectfully traversed for the remaining claims.

Yudasaka '945 does not compensate for the deficiencies of Hirai outlined above for claims 14 and 17. Nor does Yudasaka '945 teach, disclose or suggest the additional features recited in claims 1-5 and 8. Specifically, Yudasaka '945 and Hirai fail to teach or suggest a method for forming a silicon film, including providing an ink composition that includes a silicon compound onto a substrate by an ink jet process, wherein the silicon compound is represented by Si_nX_m , n representing an integer of 3 or more, m representing an integer of n , $2n-2$, $2n$, or $2n+2$, and X representing a hydrogen atom and/or a halogen atom, and the ink composition to be provided onto the substrate has a surface tension of 20 to 70 dyn/cm for preventing non-linear flight of ink when emitted, and for retaining a stable meniscus shape in an ink-jet nozzle, as recited in claim 1. Instead, Yudasaka '945 discloses TFT production using polycrystalline silicon. In particular, Yudasaka '945 teaches a layer of insulating films under a gate electrode. See col. 11, lines 18-27 and Fig. 4 of Yudasaka '945. Applicants point out that this has no relation to Applicants' claimed features.

Further, there is no motivation to combine features related to the deposition chamber of Hirai with TFT processing of Yudasaka '945, nor has the Office Action established sufficient motivation or a *prima facie* case of obviousness. Even assuming that motivation to combine the applied references is established, the combination fails to teach or suggest Applicants' claimed features.

The Office Action further rejects claims 10-12 and 19-21 under 35 U.S.C. §103(a) over Yudasaka '945 in view of Hirai and further in view of Japanese Patent 06-191821 to Kotaro *et al.* (Kotaro). This rejection is respectfully traversed.

Kotaro does not compensate for the deficiencies of Hirai and Yudasaka '945 outlined above for claims 1 and 14. Nor does Kotaro teach, disclose or suggest the additional features recited in claims 10-12 and 19-21. Instead, Kotaro discloses a film coating method using an organic solvent. In particular, Kotaro teaches saturated hydrocarbons, unsaturated hydrocarbons, aromatics and ethers with silane dissolved therein. See Abstract of Kotaro.

Further, there is no motivation to combine features related to organic solvent of Kotaro with the deposition chamber of Hirai and/or TFT processing of Yudasaka '945, nor has the Office Action established sufficient motivation or a *prima facie* case of obviousness. Even assuming that motivation to combine the applied references is established, the combination fails to teach or suggest Applicants' claimed features.

The Office Action further rejects claims 13 and 22 under 35 U.S.C. §103(a) over Yudasaka '945 in view of Hirai and further in view of U.S. Patent 5,667,572 to Taniguchi *et al.* (Taniguchi). This rejection is respectfully traversed.

Taniguchi does not compensate for the deficiencies of Hirai and Yudasaka '945 outlined above for claims 1 and 14. Nor does Taniguchi teach, disclose or suggest the additional features recited in claims 13 and 22. Instead, Taniguchi discloses a water-based ink composition. In particular, Taniguchi teaches colorant dye particles and organic solvents for the ink composition. See col. 2, lines 25-44 and col. 6, lines 43-56 of Taniguchi.

Applicants respectfully point out that the teachings of Taniguchi have no relation to silicon-hydrogen compounds recited in Applicants' claimed features.

Further, there is no motivation to combine features related to the organic ink composition of Taniguchi with the deposition chamber of Hirai and/or TFT processing of Yudasaka '945, nor has the Office Action established sufficient motivation or a *prima facie* case of obviousness. Even assuming that motivation to combine the applied references is established, the combination fails to teach or suggest Applicants' claimed features.

The Office Action further rejects claims 1-5, 8, 14 and 17 under 35 U.S.C. §103(a) over WIPO Publication WO 97/43689 to Yudasaka *et al.* (Yudasaka '689) in view of Hirai. This rejection is rendered moot with respect to claim 5, and is respectfully traversed for the remaining claims.

Yudasaka '689 does not compensate for the deficiencies of Hirai outlined above for claims 14 and 17. Nor does Yudasaka '689 teach, disclose or suggest the additional features recited in claims 1-5 and 8. Instead, Yudasaka '689 discloses the manufacturing method for a TFT device as described *infra* for Yudasaka '945.

Further, there is no motivation to combine features related to the manufacturing method of Yudasaka '689 with the deposition chamber of Hirai, nor has the Office Action established sufficient motivation or a *prima facie* case of obviousness. Even assuming that motivation to combine the applied references is established, the combination fails to teach or suggest Applicants' claimed features.

A *prima facie* case of obviousness for a §103 rejection requires satisfaction of three basic criteria: there must be some suggestion or motivation either in the references or knowledge generally available to modify the references or combine reference teachings, a reasonable expectation of success, and the references must teach or suggest all the claim limitations. See MPEP §706.02(j). Applicants respectfully assert that the Office Action fails to satisfy these requirements with the applied references.

For at least these reasons, Applicants respectfully assert that the independent claims are now patentable over the applied references. The dependent claims are likewise patentable over the applied references for at least the reasons discussed as well as for the additional features they recite. Consequently, all the claims are in condition for allowance. Thus, Applicants respectfully request that the rejections under 35 U.S.C. §§102 and 103 be withdrawn.

II. The Claims Satisfy Obviousness-Type Double Patenting Requirements

The Office Action rejects claims 14-18 and 21 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4, 6 and 9 of co-pending application 09/701,377 issued as U.S. Patent 6,527,847 to Matsuki (Matsuki '847). The Office Action further rejects claims 1-9, 12 and 23 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4, 6 and 9 of Matsuki '847 in view of Yudasaka '689. The Office Action rejects further claims 10-12 and 19-21 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4, 6 and 9 of Matsuki '847 in view of Yudasaka '689 and Kotaro. The Office Action rejects further claims 13 and 22 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4, 6 and 9 of Matsuki '847 in view of Yudasaka '689 and Taniguchi. These rejections are rendered moot with respect to claims 5 and 23, and is respectfully traversed for the remaining claims.

The Office Action further rejects claims 1, 3, 5, 8, 12, 14, 17 and 21 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 and 15 of co-pending application 09/802,908 issued as U.S. Patent 6,503,570 to Matsuki *et al.* (Matsuki '570). The Office Action rejects further claims 10, 11, 19 and 20 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 and 15 of Matsuki '570 in view of Kotaro. The Office Action rejects further claims 13 and 22 under the judicially created doctrine of obviousness-type

double patenting as being unpatentable over claims 1-10 and 15 of Matsuki '570 in view of Taniguchi. These rejections are respectfully traversed.

Obviousness-type double patenting requires rejection of an application claim when the claimed subject matter is not patentably distinct from the subject matter claimed in a commonly owned patent. Thus, to establish *prima facie* obviousness, all the claim limitations must be taught or suggested by the prior art. See MPEP §2143.03.

However, Applicants point out that while Matsuki '847 and Matsuki '570 have at least one common inventor with the present application, these references are both assigned to JSR Corporation. In contrast, the present application is jointly assigned to Seiko Epson Corporation and JSR Corporation, thus precluding common ownership therebetween.

Additionally, Applicants respectfully submit that the Office Action fails to state a proper basis for a non-statutory double patenting rejection. Specifically, the Office Action admits on page 6 that the claims in Matsuki '847 recite a coating composition, rather than a method of application. Thus, the respective claim scopes between the present application and Matsuki '847 are patentably distinct. Similarly, as admitted in the Office Action on page 7, Matsuki '570 fail to specify a particular atmosphere. Consequently, the respective claim scopes between the present application and Matsuki '570 are patentably distinct.

The rejection fails to provide a *prima facie* case of obviousness-type double-patenting, as identified the requirements of *In re Piasecki*, 745 F.2d 1468, 223 USPQ 785, 778 (Fed Cir. 1984). Applicants respectfully remind the Examiner that an obviousness-type double-patenting rejection is “analogous to the non-obviousness requirement of 35 U.S.C. §103.” See MPEP §804 (II)(B)(1). The Office Action has not followed the procedure as so set forth in detail.

Because the analysis employed in an obviousness-type double patenting determination parallels the guidelines for a 35 U.S.C. §103(a) rejection, the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied

for establishing a background for determining obviousness under §103 are employed when making an obviousness-type double patenting analysis. These factual inquiries are summarized as follows:

- (a) Determine the scope and content of a patent claim and the prior art relative to a claim in the application at issue;
- (b) Determine the differences between the scope and content of the patent claim and the prior art as determined in (a) and the claim in the application at issue;
- (c) Determine the level of ordinary skill in the pertinent art; and
- (d) Evaluate any objective *indicia* of non-obviousness.

The conclusion of obviousness-type double patenting is made in light of these factual determinations. Any obviousness-type double patenting rejection should make clear:

- (1) The differences between the inventions defined by the conflicting claims – *e.g.*, a claim in the patent compared to a claim in the application; and
- (2) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim in issue is an obvious variation of the invention defined in a claim in a patent.

Applicants' claims were rejected solely on the ground that claims 1, 4, 6 and 9 of Matsuki '847 and claims 1-10 and 15 of Matsuki '570 claim the same invention. Applicants submit that this Office Action rejection is made without support, as required. In particular, the rejection was made without (a) defining the claimed inventions in this application, Matsuki '847 and Matsuki '570; (b) without specifying the differences between the inventions defined by the conflicting claims; and (c) without specifying the reasons why a person of ordinary skill in the art would conclude that the invention defined in Applicants' claims are an obvious variation of the invention defined in claims 1, 4, 6 and 9 of Matsuki '847 and claims 1-10 and 15 of Matsuki '570. Thus, Applicants respectfully submit that the double-patenting rejection is improper and should be withdrawn.

III. Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,



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